

CLAIMS

What is claimed is:

- 1 1. A light-emitting acoustic module, comprising:
  - 2 a backing panel attachable to a support;
  - 3 a light-diffusing, acoustically non-reflective cover attached to the backing panel, at least a portion of the cover being spaced apart from the backing panel to define a cavity between the backing panel and the cover, the cover forming a ceiling surface; and
  - 8 a plurality of light-emitting elements disposed in the 9 cavity between the backing panel and the cover, the light-emitting 10 elements being operative to produce light diffusible through the 11 cover.
- 1 2. A light-emitting acoustic module according to claim 1, wherein 2 the cover is fabric.
- 1 3. A light-emitting acoustic module according to claim 2, wherein 2 the fabric cover is draped and/or stretched over the backing 3 panel.
- 1 4. A light-emitting acoustic module according to claim 1, wherein 2 the cover is made of a non-rigid material, and further comprising 3 a rigid spacing member disposed between the backing panel and the 4 cover maintaining separation therebetween.
- 1 5. A light-emitting acoustic module according to claim 4, wherein 2 the spacing member is a centrally disposed cylindrical sleeve.

1       6. A light-emitting acoustic module according to claim 4, wherein  
2       the light-emitting elements are attached to the spacing member.

1       7. A light-emitting acoustic module according to claim 4, wherein  
2       the spacing member has a central opening, and wherein the  
3       light-emitting elements are disposed within the central opening of  
4       the spacing member.

1       8. A light-emitting acoustic module according to claim 1, wherein  
2       the cavity attenuates and traps sound.

1       9. A light-emitting acoustic module according to claim 1, further  
2       comprising audio loudspeakers disposed in the cavity.

1       10. A light-emitting acoustic module according to claim 1, further  
2       comprising a wireless network access point disposed in the cavity.

1       11. A light-emitting acoustic module according to claim 1, wherein  
2       the cover is a rigid material.

1       12. A light-emitting acoustic module according to claim 11,  
2       wherein the cover includes small perforations to provide for sound  
3       entry.

1       13. A light-emitting acoustic module according to claim 11,  
2       wherein the cover includes integrated phosphor pigments so as to  
3       be excited by the lighting elements and emit light.

1       14. A light-emitting acoustic module according to claim 1, wherein  
2       the lighting elements are located on the backing panel.

1   15. A light-emitting acoustic module according to claim 1, wherein  
2   the light-emitting elements include at least one array of  
3   light-emitting diodes (LEDs).

1   16. A light-emitting acoustic module according to claim 15,  
2   wherein the LEDs include organic LEDs (OLEDs).

1   17. A light-emitting acoustic module according to claim 15,  
2   wherein the LEDs include high brightness LEDs (HBLEDs).

1   18. A light-emitting acoustic module according to claim 15,  
2   wherein at least two arrays of light-emitting diodes are included,  
3   a first array being centrally located and a second array being  
4   disposed about the first array and spaced apart therefrom.

1   19. A light-emitting acoustic module according to claim 1, wherein  
2   the cover is made of a woven material.

1   20. A light-emitting acoustic module according to claim 19,  
2   wherein the woven material incorporates metallic light-reflective  
3   fibers.

1   21. A light-emitting acoustic module according to claim 1, wherein  
2   the backing panel is planar and edge-suspendable so as to be  
3   usable in a hung ceiling system.

1   22. A light-emitting acoustic module according to claim 21,  
2   wherein the edges of the backing panel have a stepped  
3   configuration for overlapping the edges of adjacent modules when  
4   installed in the hung ceiling system.

1   23. A light-emitting acoustic module according to claim 1, wherein  
2   the backing panel includes mounting features disposed on a rear  
3   surface thereof for attaching the backing panel to the support.

1   24. A light-emitting acoustic module according to claim 23,  
2   wherein the mounting features are configured to allow for a  
3   cluster of multiple similar modules to be mounted in overlapped  
4   fashion.

1   25. A light-emitting acoustic module according to claim 24,  
2   wherein the backing panel in each of the modules of the cluster is  
3   planar and oval.

1   26. A light-emitting acoustic module according to claim 1, wherein  
2   the backing panel is planar and rectangular.

1   27. A light-emitting acoustic module according to claim 26,  
2   wherein the backing panel is square.

1   28. A light-emitting acoustic module according to claim 1, wherein  
2   the backing panel is planar and oval.

1   29. A light-emitting acoustic module according to claim 1, wherein  
2   the backing panel is planar and round.

1   30. A light-emitting acoustic module according to claim 1, wherein  
2   the light-emitting elements comprise color-changing solid state  
3   lighting elements.

1   31. A light-emitting acoustic module according to claim 30,  
2   wherein the color-changing solid state lighting elements comprise  
3   stacked red-green-blue (RGB) light-emitting diode (LED) chips.

1       32. A light-emitting acoustic module according to claim 30,  
2 wherein the solid-state lighting elements are controllable via  
3 analog electronics.

1       33. A light-emitting acoustic module according to claim 30,  
2 wherein the solid-state lighting elements are controllable via  
3 digital electronics.

1       34. A light-emitting acoustic module according to claim 33,  
2 wherein the digital electronics are hardwired to the solid-state  
3 lighting elements.

1       35. A light-emitting acoustic module according to claim 33,  
2 wherein the digital electronics are wirelessly coupled to the  
3 solid-state lighting elements.

1       36. A light-emitting acoustic module according to claim 1, wherein  
2 the light-emitting elements comprise fluorescent lamps.

1       37. A light-emitting acoustic module according to claim 1, wherein  
2 the backing panel is acoustically absorbent.

1       38. A light-emitting acoustic module according to claim 1, wherein  
2 the backing panel and cover have respective openings for  
3 permitting passage of a sprinkler head when the module is  
4 installed in a ceiling.

1       39. A light-emitting acoustic module according to claim 1, wherein  
2 the light-emitting elements are disposed on a sub-assembly that is  
3 installable separately from the remainder of the module.

1    40. A light-emitting acoustic module according to claim 1,  
2    wherein the cover is removably attached to the backing panel to  
3    permit access to the cavity of the module when installed in a  
4    ceiling.